

Abstract

The present invention is intended to provide a novel gene originating in an acetic acid bacterium, which participates in temperature tolerance; a method of improving the temperature tolerance of a microorganism, in particular, an acetic acid bacterium using the above gene; and a method of efficiently producing vinegar having a higher acetic acid concentration with the use of an acetic acid bacterium whose temperature tolerance has been improved.

In the present invention, from a chromosomal DNA library of acetic acid bacteria, a novel gene participating in temperature tolerance was cloned from a practically usable acetic acid bacterium belonging to the genus *Gluconacetobacter* by using a method of obtaining a gene which has a function of enabling growth even under such temperature conditions in which it cannot grow usually. Further, in a transformant in which the gene was introduced into an acetic acid bacterium, temperature tolerance was remarkably improved, and when the transformant was cultured with aeration and stirring in the presence of ethanol, the final acetic acid concentration can be remarkably improved.